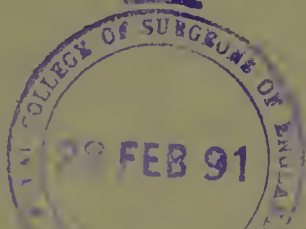


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ARSENICAL WALL-PAPERS AND CRÉTONNES.

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THE Public Analyst of the City of London, in his annual report, says that his attention has been especially drawn to the continued employment of arsenic in the manufacture of domestic fabrics, wall-papers, children's toys, and numerous other articles in daily use in households. He relates the following case in point:—The occupants of two bedrooms in the same house constantly complained of headache, nausea, and lassitude, together with other indications of arsenical poisoning. Attention was drawn to the wall-paper by the medical man consulted, and upon a portion of the paper being removed and examined an exceptionally large quantity of arsenic was obtained. Upon the removal of the wall-paper and a resort to appropriate treatment, the symptoms subsided, and the patients made a rapid recovery. From what has of late come to my knowledge I have reason to believe that the use of arsenical pigments in the manufacture of articles in daily use is on the increase. I have met with many cases of arsenical poisoning by wall-papers and other textile fabrics during the past year, and some of which presented symptoms which occasioned considerable alarm; as in the first instance the cause of the illness had been either overlooked or mistaken. Nevertheless efforts have from time to time been made to direct attention to this important matter. It will be in the recollection of

the readers of the *Medical Press and Circular* that some ten years ago a committee of Fellows of the Medical Society of London was formed, over which I presided, and that then a considerable effort was made to arouse the attention of the profession, and to obtain further and fuller information as to the extent of the then existing danger to public health. Fifteen hundred letters were addressed to members of the profession, and the questions asked took the following form:—"1. Have you had under your observation during the last five years any cases clearly traceable to arsenical poisoning produced by wall-papers, paint, articles of furniture, or wearing apparel, &c.? 2. Any cases previous to that time? 3. What were the first symptoms that led you to suspect this form of poisoning? 4. State briefly the prominent characteristics of each case? 5. Were there any external symptoms of irritation? 6. How long was it in each case before the patient recovered health and strength? 7. Were there any cases fatal? 8. What article contained the poison? What tests were employed to detect its presence? 9. How many cases occurred in men? How many in women? How many in children?" The number of replies received were 224, and of these fifty-four furnished or afforded particulars of cases of poisoning by arsenical wall-papers or other domestic fabrics from personal observation. A very important feature, however, of this testimony was that in twenty-four instances the poisoning occurred in the persons of the medical men themselves, or in members of their families, and which is some evidence of the difficulties attending the diagnosis of this form of poisoning, and at the same time it seems to imply that with the better opportunities for observation afforded to a medical man in his own house, he is more likely to detect the mischief than he otherwise would be, and which from its insidious nature will often baffle detection by ordinary tests; or which on the other hand, by assuming symptoms of a general character, may entirely mislead the general practitioner.

It more rarely happens that the symptoms of poisoning by arsenical wall-papers are at the outset of so marked a character as to enable every practitioner to form a correct diagnosis in every case. In the following case

there could be no mistake in the matter. It is an interesting example of the rapid and virulent nature of the poison, acting on one more perhaps than ordinarily susceptible of its influence. It affords an illustration also of the danger to which any one may inadvertently be exposed on taking possession of a bedroom quite newly papered with an arsenical paper.

‘I went (says Mr. Corbould) a few years ago to Osborne to execute a particular work in a given space of time. In order that I should be as near my work as possible I took a room at a neighbouring hotel. On the second day I found I was suffering from a very bad cold, a regular catarrh, and which I attributed to the damp state of the walls of the bedroom in which I slept. This coming to the knowledge of the Queen, she in her graciously considerate way gave immediate instructions for a room to be prepared for me in Victoria Cottage, just outside of Osborne; this I took possession of at the end of the day’s work. A blazing fire greeted me as I opened the door of a delightfully cosy room. The servant on leaving me for the night told me I should find an additional supply of Witney blankets at the foot of the bed should the covering not prove warm enough. Being tired I soon retired for the night. I felt very chilly, and as I could not get warm I drew the reserve blankets over me, but as this did not mend matters I bethought me of my large and well-lined Spanish cloak which was hanging on the door. I threw aside the bed-clothes, made an effort to get out of bed, and to my horror discovered that I had lost the use of my legs. A violent pain of the bowels followed, and then vomiting. In a few moments more I must have fainted from exhaustion, as I remember nothing more until I was aroused at eight o’clock in the morning by the loud knocking of the servant, who brought me a cup of tea. In a feeble voice I bade her come in. I sat up to take it, and then the morning light came streaming into the room, and I saw for the first time that the walls were papered with a brilliant green paper. In a state of excitement I exclaimed, ‘It is arsenic, and I have been poisoned.’ The servant was for a moment bewildered, and I at length explained that I alluded to the wall-paper. On a first attempt to get out of bed I was so weak that I could scarcely

stand, but, managing to get my dressing-gown on, I staggered out of the room into the corridor, where I found an open window. The fresh cool air of the morning seemed to give me new life, and in a few minutes all the unpleasant feelings seemed to vanish and I was able to finish my dressing and make my way to the palace." The paper was examined by the Queen's command and found to be highly arsenical. It was at once stripped from the walls. It, however, required some days to restore Mr. Corbould to health and strength. It has been definitely determined that the maximum amount of arsenic which should be permitted to enter into any wall-paper is '567 grain per piece, that is, rather more than half a grain. This would amount to about five grains in an ordinary-sized bedroom. This standard of safety is, I believe, maintained by the larger firms of wall-paper makers. In a recent instance, and this where a warranty was given, I found an amount of arsenic very much greater; but it was in a paper of foreign manufacture. A very considerable trade is still maintained with France, and the London market I am told is flooded by the cheaper kinds of French wall-papers as well as other textile fabrics. Among the latter I may particularise cretonnes and muslins. It is now some ten years ago since I first directed attention to arsenical poisoning by both of these materials. (a) I then found arsenic in terra cotta cretonnes as well as those of brighter colours. A few weeks ago a lady consulted me suffering from conjunctival irritation. It appeared that this patient, Mrs. H., and her sister had been closely engaged in making cretonne curtains for the bed-room. The cretonne was for the most part of a greenish-brown colour, with a red flower running over it, and the lining material a sombre brown. On the second day a whitlow appeared on the thumb of the left hand, and soon afterwards a series of boils appeared, first on the arms, and then the eyes became inflamed. The sister of the lady was also a sufferer, but not nearly to the same extent. The cretonne was suspected, and on submitting it to chemical analysis a very considerable quantity of arsenic was discovered. The duller lining material yielded a rather larger

(a) See "Arsenic and Arsenical Domestic Poisoning," *Medical Press and Circular* 1879

amount than the cretonne. By the aid of appropriate remedies, assisted by change of air, my patient made a speedy recovery. The illness was at first attributed to blood-poisoning.

An analytical chemist, Mr. Matthews, lately reported on numerous specimens of suspected cretonnes, and scarcely one of them was wholly free from arsenic. Of 44 of the cretonnes examined by him 21 showed traces of arsenic, and the remainder very considerable quantities. A square yard cut from one sample and subjected to a quantitative analysis yielded no less than $19\frac{1}{2}$ grains of arsenious acid. Several serious cases of illness were traced to these cretonnes. An immense amount of confirmatory evidence has during the last few years been published, nevertheless one still meets with those who seem to be sceptical or undecided as to the injury done to health by arsenical wall-papers. On taking up the *Chemical News*, a few months since, I came upon a paper on "Arsenic in the Home," by Mr. A. W. Stokes, and to my surprise learnt ~~that~~ that arsenical papers and cretonnes are not nearly so dangerous as they have been represented to be. On reading over the abstract of this paper I have no hesitation in saying that this gentleman's experiments are as inconclusive as were those of Mr. Phillips, consulting chemist to the Commissioners of Inland Revenue, made some thirty years ago, and whose laboratory experiments proved simply that the arsenious acid had eluded his grasp, had, in fact, become volatilised and dissipated into space. Mr. Stokes's tubes, like Mr. Phillips's, were in every way unsuitable for the purpose proposed, namely, that of obtaining the metallic ring of octahedral crystals of arsenic, and which can only be got by employing tubes of small dimensions—one-eighth of an inch. Moreover, a cluster of crystals so obtained require a magnifying power of 200 diameters for their detection. In tubes of three-quarters of an inch in diameter, subjected to a red heat for six hours, no one would expect to find at the conclusion of the experiment the least trace of arsenic. Notwithstanding, Mr. Stokes came to the conclusion "that under ordinary circumstances arsenic would not be evolved by such fabrics" as wall-papers, cretonnes, &c. Other chemists, experimenting under different conditions, have arrived at a totally different conclusion, have satisfied them-

selves that wall-papers do give off an appreciable and even dangerous quantity of arsenic. Professor Hamberg, of Stockholm, for instance, found no difficulty whatever in detecting arsenic in a gaseous combination in the atmosphere of a room that had been papered a quarter of a century before he made his experiment. The late Dr. Alfred Taylor found no difficulty whatever in finding arsenic both in the air and dust of rooms papered with arsenical papers. In his opinion the dust was more dangerously potent than the gaseous body, the hydrogen arsenide, which is ordinarily given off at a higher temperature. His views on this point are warmly espoused by a large manufacturer of wall-papers, who says "it is especially noticeable in the case of the men employed at my printing works, that the printers who work on several thicknesses of felt (technically, blankets), and which become charged with arsenical dust, are much more affected by it than are those workmen who have charge of a different stage of the printing process, where the dust does not accumulate in the same proportion."

In conclusion, a word or two must be said on the tests employed. It is an open secret that among analytical chemists a difference of opinion still exists as to the exact value of Marsh's and Reinsch's tests, neither of which can be admitted to be a standard test for the detection of small quantities of arsenic, such as very many wall-papers and other fabrics yield. Mr. Heisch, the well-known analytical chemist of the city of London, writes: "A standard limit of accidental and unavoidable contamination, as well as of small quantities of arsenic, whereat chemists may compare results, is still a desideratum." Some two or three years ago Mr. Heisch made a series of very careful experiments with the view of determining the amount of arsenic that might be with an approach to safety left in coloured fabrics, without becoming highly detrimental to health. It was while so engaged that he came to the conclusion that implicit reliance should be placed on either of the ordinary tests in general use, namely, Marsh's and Reinsch's. He was at first of opinion that the latter if carefully conducted would ensure more uniform results than the former, but subsequently, finding several wall-papers and textile fabrics which gave no arsenical reaction with Reinsch's test, however carefully conducted,

and which, nevertheless, were subsequently proved to contain notable quantities of arsenic, this test was abandoned and a modification of Marsh's process found best suited to discover the truth. But it does not follow that because this or that process breaks down in the hands of a competent chemist, furnishes negative results rather than positive of the presence of arsenic, that medical men will accept the dictum loosely laid down in the paper above referred to, "that in all cases the quantity of arsenic found is small, and under ordinary circumstances quite harmless."(a) This I have no hesitation in saying is a dangerous assertion, and may lead to a very considerable amount of harm. For the benefit of my readers and the public let me finish by enumerating the several articles in which arsenical pigments, dyes, or mordants are used within the knowledge of those who have from time to time taken every pains to verify their statements.

Paper, fancy and surface, coloured: In sheets—For covering cardboard boxes, labels of all kinds, advertisement cards, playing cards, wrappers and cases for sweetmeats, cosagues, &c., the ornamentation of children's toys, covering children's and other books, lamp shades; paper-hangings for walls and other purposes, artificial leaves and flowers, wax ornaments for Christmas trees and other purposes, printed or woven fabrics intended for use as garments; printed or woven fabrics intended for use as curtains or coverings for furniture, children's toys, particularly inflated india-rubber balls with dry colour inside, painted india-rubber dolls, stands and rockers of rocking-horses and the like, glass balls (hollow), distemper colour for decorative purposes, oil paint colour for decorative purposes, lithographic colour printing, decorated tin plates, including painted labels used by butchers and others to advertise the price of provisions, japanned goods generally, venetian and other blinds, American or leather cloth, printed table baizes, carpets, floorcloth, linoleum, book cloth and fancy bindings.

(a) It is only right to say that with regard to the use of "Arsenic in the Home," Mr. Stokes admits a case has been made out for its prohibition by law.

